

Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1-17 (Canceled)

18. (Currently Amended) A system comprising:
a fuel cell;
a steam reformer operable to produce hydrogen for use by the fuel cell from steam and hydrocarbons; and
a vaporizer for supplying the steam to the steam reformer;
wherein the steam reformer is a panel defining a first face comprising one or more heating channel inlets and a second face comprising one or more heating channel outlets and a corresponding one or more heating channels extending therebetween, wherein the panel further comprises a plurality of reforming channels configured to reform steam and comprising a catalyst therefor, and wherein each of the one or more heating channels is configured to transfer heat from a fluid passing through therethrough to a fluid passing through the reforming channels, wherein the length and width of each face is substantially greater than the distance between the faces, such that each of the one or more heating channels is substantially shorter in length than each of the reforming channels.

19. (Currently Amended) The system of claim 18, ~~further comprising a multiplicity of reformer heating channels from the first face to the second face of the steam reformer wherein the smallest open dimension of each heating channel the heating channels~~ is less than about 0.05 inch.

20. (Previously Presented) The system of claim 19 wherein the vaporizer is a panel defining a first face and a second face having a multiplicity of vaporizer heating channels

therethrough, wherein the vaporizer heating channels are downstream from the reformer heating channels.

21. (Previously Presented) The system of claim 20 further comprising variable speed blower means for conveying hot gas through the reformer and vaporizer heating channels at different flow rates during system start up and system operation.

Claims 22-23 (Canceled)

24. (Withdrawn) The system of claim 18 wherein there is no intervening heat exchanger between the heating sides of the steam reformer and the vaporizer.

25. (Withdrawn) The system of claim 24 wherein at least one of the vaporizer and the steam reformer define an inlet face defining inlets to heating side flow paths and an outlet face defining outlets to the heating side flow paths wherein each of the faces have a length and width substantially greater than the distance between the faces.

26. (Withdrawn) The system of claim 25 wherein the smallest dimension of the heating side flow paths is less than about 0.05 inch.

Claims 27-53 (Canceled)

54. (Withdrawn) The system of claim 18 wherein each of the reformer and the vaporizer comprises a stack of thin sheets integrally bonded, wherein recesses in the sheets define at least a portion of flow paths through each of the reformer and the vaporizer.

55. (Withdrawn) The system of claim 54 wherein the reformer stack of thin sheets is an alternating stack of heating side sheets and reforming side sheets, each of the heating side sheets and reforming side sheets including header holes aligned with an inlet and an outlet, wherein recesses in the heating side sheets define heating side flow channels and recesses in the reforming side sheets define reforming flow channels between the holes.

56. (Withdrawn) The system of claim 54 wherein the vaporizer stack of thin sheets is an alternating stack of heating side sheets and vaporizing side sheets, each of the heating side sheets and vaporizing side sheets including header holes aligned with an inlet and an outlet, wherein recesses in the heating side sheets define heating side flow channels and recesses in the vaporizing side sheets define vaporizing flow channels between the holes.

57. (Withdrawn) The system of claim 18, wherein the vaporizer has a heating side downstream from a heating side of the steam reformer.

58. (Withdrawn) The system of claim 57 further comprising at least one blower and a controller, wherein the controller is operable to selectively cause the at least one blower to convey a hot gas through the heating sides at substantially different mass flow rates during a start up phase and an operating phase of the system.

59. (Withdrawn) The system of claim 57, further comprising a combustion zone for supplying a hot gas to the heating side of the steam reformer.

60. (New) The system of claim 21, wherein the hot gas comprises a combustion gas.

61. (New) The system of claim 18, wherein a start up period for increasing a temperature of the steam reformer from an ambient temperature to a substantially steady-state operating temperature is less than about 60 seconds.